The following is a complete listing of all claims in the application, with an indication of the status of each:

Listing of claims:

1. (currently amended) A magnetoresistive effect sensor using a shielded-type magnetoresistive effect element comprising:

a magnetoresistive effect film above a lower shield layer, said film comprising a basic configuration that is a combination of a free layer, a barrier layer, and a fixed layer, wherein either said barrier layer is formed on said free layer, said free layer being an underlying layer for the barrier layer, and said fixed layer is formed on said barrier layer, or said barrier layer is formed on said fixed layer, said fixed layer being the underlying layer, and said free layer is formed on said barrier layer, said barrier layer inheriting a roughness of said lower shield layer, wherein a sensing current flows substantially perpendicularly with respect to said magnetoresistive effect film, and wherein either an amorphous material or a microcrystalline material is used in said lower shield layer so as to smooth said lower shield layer, thereby increasing the smoothness of said barrier layer.

2. (currently amended) A magnetoresistive effect sensor according to claim 1, wherein said lower shield layer comprises a crystal grain diameter of 6.2 nm or smaller.

3. (currently amended) A magnetoresistive effect sensor according to claim 1 or claim 2, wherein said lower shield layer is made of a material of CoZrTa~~, with a~~ and CoZrTaCr alloy, said lower shield layer serving as a base layer for said ~~free~~ underlying layer.

4. (withdrawn) A magnetoresistive effect sensor according to claim 1, wherein said lower shield is formed by means of sputtering.

5. (withdrawn) A magnetoresistive effect sensor according to claim 1, wherein a magnetoresistive effect film having a basic configuration that is either a combination of a free layer, a barrier layer formed on said free layer, and a fixed layer formed on said barrier layer, or a combination of a fixed layer, a barrier layer formed on said fixed layer, and a free layer formed on said barrier layer is formed on said lower shield directly or formed thereon via an intervening base layer.

6. (withdrawn) A magnetoresistive effect sensor according to claim 1, wherein a lower conductor layer is disposed at a bottom part of a magnetoresistive effect film having a basic configuration that is either a combination of a free layer, a barrier layer formed on said free layer, and a fixed layer formed on said barrier layer, or a combination of a fixed layer, a barrier layer formed on said fixed layer, and a free layer formed on said barrier layer, a bottom part of said lower conductor layer being in contact with a lower shield.

7. (withdrawn) A magnetoresistive effect sensor wherein in a magnetoresistive effect element in which a conductor layer is disposed at a bottom part of a magnetoresistive effect film having a basic configuration that is either a combination of a free layer, a barrier layer formed on said free layer, and a fixed layer formed on said barrier layer, or a combination of a fixed layer, a barrier layer formed on said fixed layer, and a free layer formed on said barrier layer, in contact either with an intervening base layer or directly

therewith, wherein said lower conductor layer functions as a lower electrode to cause a sensing current to flow in said magnetoresistive effect film, and further wherein a lower conductor is made of a material selecting from a group consisting of an amorphous material and a microcrystal.

8. (withdrawn) A magnetoresistive effect sensor according to claim 7, wherein said microcrystal forming said lower conductor layer comprises a crystal grain diameter of 5.4 nm or smaller.

9. (withdrawn) A magnetoresistive effect sensor according to claim 7, wherein said lower conductor layer is formed by sputtering.

10. (withdrawn) A magnetoresistive effect sensor according to claim 1, further comprising a layer which fixes a magnetization of a fixed layer, provided so as to be in contact with said fixed layer.

11. (withdrawn) A method for manufacturing a magnetoresistive effect sensor whereby a shielded-type magnetoresistive effect element in which a sensing current flows substantially perpendicular to a magnetoresistive effect film, using a magnetoresistive effect film having a basic configuration that is either a combination of a free layer, a barrier layer formed on said free layer, and a fixed layer formed on said barrier layer, or a combination of a fixed layer, a barrier layer formed on said fixed layer, and a free layer formed on said barrier layer, wherein a material selected from a group consisting of an amorphous material and a microcrystalline material is used in a lower shield.

12. (withdrawn) A method for manufacturing a magnetoresistive effect sensor according to claim 11, wherein said microcrystal used in said lower shield comprises a crystal grain diameter of 6.2 nm or smaller.

13. (withdrawn) A method for manufacturing a magnetoresistive effect sensor according to claim 11, wherein said lower shield is formed using sputtering.

14. (withdrawn) A method for manufacturing a magnetoresistive effect sensor according to claim 11, wherein a magnetoresistive effect film having a basic configuration that is either a combination of a free layer, a barrier layer formed on said free layer, and a fixed layer, or a combination of a fixed layer, a barrier layer formed on said fixed layer, and a free layer is formed on said lower shield directly or formed thereon via an intervening base layer.

15. (withdrawn) A method for manufacturing a magnetoresistive effect sensor according to claim 11, whereby a lower shield layer is formed and a lower conductor layer is formed on said lower shield layer, and further whereby a magnetoresistive effect film having a basic configuration that is either a combination of a free layer, a barrier layer formed on said free layer, and a fixed layer, or a combination of a fixed layer, a barrier layer formed on said fixed layer, and a free layer formed on said barrier layer is formed on said lower conductor layer, either directly or via an intervening base layer.

16. (withdrawn) A method for manufacturing a magnetoresistive effect sensor whereby a magnetoresistive effect film having a basic configuration that is either a combination of a free layer, a barrier layer formed on said free layer, and a fixed layer, or a combination of a fixed layer, a barrier layer

formed on said fixed layer, and a free layer formed on said barrier layer is formed either directly on a lower conductor layer or thereonto with an intervening base layer, and further wherein, said lower conductor layer being made of a material selected from a group consisting of an amorphous material and a microcrystalline material.

17. (withdrawn) A method for manufacturing a magnetoresistive effect sensor according to claim 16, whereby said lower conductor layer is formed by a microcrystal comprising a crystal grain diameter of 5.4 nm or smaller.

18. (withdrawn) A method for manufacturing a magnetoresistive effect sensor according to claim 16, whereby said lower conductor layer is formed by sputtering.

19. (withdrawn) A method for manufacturing a magnetoresistive effect film according to claim 11, whereby a layer fixing a magnetization of a fixed layer is further formed, so as to be in contact with said fixed layer.

20. (withdrawn) A magnetoresistance detection system comprising a magnetoresistive effect sensor according to claim 1, a means for generating a current passing through a magnetoresistive effect sensor, and means for detecting a change in magnetoresistance of said magnetoresistive effect sensor as a function of a detected magnetic field.

21. (withdrawn) A magnetic recording system comprising a magnetic storage medium comprising a plurality of tracks for data recording, a magnetic recording system for storing data on said magnetic storage medium, a magnetoresistance detection system according to claim 20, and an actuating

means lined to said magnetic recording system and a magnetoresistance conversion system for the purpose of causing said magnetic recording system and said magnetoresistance detection system to move to a selected track of said magnetic storage medium.